



The Problem of Marine Engine Pollution

New England has thousands of miles of shoreline coastal water and hundreds of lakes and ponds. These water bodies provide outdoor enthusiasts with many opportunities to enjoy boating.

Until recently, most outboard engines and personal water craft were powered by conventional carbureted two-stroke marine engines. These traditional engines have adverse impacts on the environment. Up to 30% of the fuel passes through the combustion chamber unburned or partially burned, thereby being released directly into the water and air as pollution.

- **In the air**, unburned gasoline results in hydrocarbon emissions, which contribute to the formation of ground-level ozone or smog. Smog can irritate the respiratory system and aggravate existing respiratory conditions such as asthma.
- **In the water**, gasoline elevates concentrations of benzene, MTBE, and other toxics.

Low-Pollution Marine Engines are Now Available

The **GOOD NEWS** is that cleaner, low-pollution outboard and personal watercraft marine engines are available from Rhode Island marine dealers. These engines are better for the environment, easier to maintain, and more fuel efficient. They generally cost more, but the benefits are substantial for the environment, for your boating enjoyment, and for saving money in the long run.

Two Types of Low-Pollution Engines

• 4- Stroke Engines

This technology prevents unburned fuel from escaping through the exhaust valve, which significantly reduces hydrocarbon emissions. No oil mixing with gasoline also improves overall engine performance.

**Reference Source- The New Hampshire boaters pamphlet "Marine Engines and the Environment", March 2001*

• 2-Stroke Direct Fuel Injection Engines

New technology two-stroke engines feature direct fuel injection which directly introduces the fuel into the combustion chamber. As a result, the up to 30% fuel loss experienced with the traditional technology is eliminated, with an overall fuel economy improvement.

Eco-Friendly Boating Tips

The following are some commonly known fueling and engine maintenance practices:

Fueling

Proper fueling reduces the introduction of gasoline into the water.

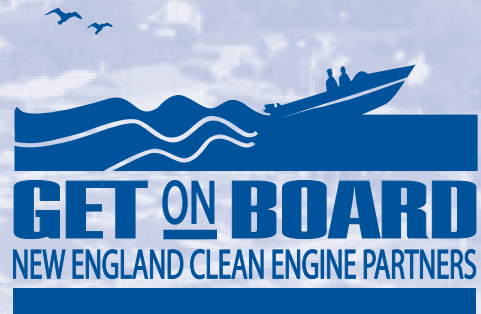
- Ensure boat stability when fueling
- Use a spill-proof gasoline container
- Use fuel collars to capture splash/drips
- Use bilge pillows and engine pads to absorb oils and fuels, and dispose of them properly
- Close the vent on portable gas tanks when the engine is not in use or when tank is stored
- Do not rely on automatic nozzle shutoffs, the fuel filling nozzle should be attended at all times
- Avoid topping off gas tanks

Engine Maintenance

Good engine maintenance improves operating efficiency and reduces emissions.

- Limit engine operation at full throttle, and eliminate unnecessary idling
- Repair gas and oil leaks immediately
- Check, clean and flush engine away from the water
- Keep engine properly tuned
- Prepare engines properly for winter storage
- Do not fog the engine in the water
- Contain all waste and recycle or dispose of properly

Low-Pollution Marine Engines A Cleaner Way to Enjoy Boating



Benefits of Low-Pollution Marine Engines

- Burn 35% to 50% less gas
- Use up to 50% less oil
- Save money over the life of the engine
- Reduce air emissions by 75% or more
- Reduce water pollution by reducing the amount of gasoline released into surface waters
- Are easier to start
- Have a more precise throttle response
- Are quieter
- Reduce smoke and fumes
- Are better for New England's environment!

Get on Board!

If you are in the market for a new outboard motor or personal watercraft, ask your dealer about the four-stroke or new direct fuel injection two-stroke engines.

Help Make New England's Air and Water Clean!

For further information call

EPA New England at 617-918-1836

RI Marine Trade Association at 401-885-5044

DEM Customer Assistance at 401-222-6822



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With the cooperation of marine engine manufacturers, U.S. EPA has issued regulations designed to significantly reduce the amount of pollutants released from outboard and personal watercraft engines. From 1998 to 2006, average air emission standards for outboard and personal watercraft engine manufacturers will become increasingly more stringent. Controlling these exhaust emissions will result in an unprecedented 75% reduction in hydrocarbon emissions from these engines by the year 2025. To achieve the yearly emissions reductions required by the regulations, it is anticipated that manufacturers will each year build increasing numbers of lower emission engines.

To encourage consumers to purchase cleaner-burning marine engines before the final standard goes into effect in 2006, EPA New England is teaming up with the RI Department of Environmental Management, the RI Marine Trade Association, the Marine Retailers Association of America, and the National Marine Manufacturers Association in launching a New England-wide Clean Marine Engine Initiative. These new engines deliver improved performance, reduced fuel usage and reduced emissions. Although the new marine engines cost about 15% more than traditional ones, savings from decreased fuel consumption help offset the higher purchase price, resulting in a "win-win" situation for both consumers and the environment.

